**SUBSCRIPTIONS FOR 1936 NOW PAYABLE**
**Detachable Subscription Blank in this Number**

# ENTOMOLOGICAL NEWS

**NOVEMBER, 1935**

Vol. XLVI No. 9

JOHN MERTON ALDRICH;
1866-1934.

CONTENTS

Hebard—Notes on Acrydium and the Actual Status of Three Supposedly American Species (Orthoptera, Acrididae, Acrydiinae). 231
Smith—A List of the Ants of Oklahoma (Hymen.: Formicidae). . . . 235
Knowlton and Smith—Notes on Utah Scarabaeidae and Chrysomelidae (Coleoptera). . . . . 241
Pate—Synonymical Notes on the Fossorial Wasps (Hymenoptera: Sphecidae, Pompilidae and Tiphiidae). . . . . 244
Entomological Literature . . . . . 251
Review—Brief Directions in Histological Technique . . . . . 257
Cresson—A Fifty Year Festschrift . . . . . 257
Obituary—Prof. George Hazen French . . . . . 258
Note—Biographical Article on Eugene Amandus Schwarz . . . . . 258

PHILADELPHIA, PA.
THE ACADEMY OF NATURAL SCIENCES,
Logan Square

Entered at the Philadelphia, Pa., Post Office as Second Class Matter.
Acceptance for mailing at the special rate of postage prescribed for in Section 1.
Act of October 3, 1917, authorized January 15, 1921.

# ENTOMOLOGICAL NEWS

published monthly, excepting August and September, by The American Entomological Society.

Philip P. Calvert, Ph.D., Editor; E. T. Cresson, Jr., R. G. Schmieder, Ph.D., Associate Editors.

Advisory Committee: Philip Laurent, J. A. G. Rehn, Chas. Liebeck, J. Chester Bradley, Ph.D., Frank Morton Jones, Sc.D., John C. Lutz, Max Kisliuk, Jr., Wm. W. Chapman.

The subscription price per year of ten (10) numbers is as follows:

| | |
|---|---|
| United States and possessions, Central and South America | $3.00 |
| Canada | 3.15 |
| Foreign | 3.25 |

Single copies 35 cents.

ADVERTISING RATES: Full width of page. Payments in advance.
One issue, 1 in., $ 1.20, 3 in., $ 3.00, 5 in., $ 5.00, 7 in., $ 7.00
Ten issues, " 8.00, " 25.00, " 45.00, " 60.00

**SUBSCRIPTIONS.** All remittances and communications regarding subscriptions, non-receipt of the NEWS or of reprints, and requests for sample copies, should be addressed to

**ENTOMOLOGICAL NEWS, 1900 Race Street, PHILADELPHIA, PA.**

All complaints regarding non-receipt of issues of the NEWS should be presented within three months from date of mailing of the issue. After that time such numbers, if available, will be supplied only by purchase. Not more than two issues will be replaced gratis, through loss in transit or in change of address, unless such have been registered, at the subscriber's expense. No subscriptions accepted which involve giving a receipt acknowledged before a notary, except at the subscriber's expense.

**MANUSCRIPTS AND ADVERTISEMENTS.** Address all other communications to the editor, Dr. P. P. Calvert, Zoological Laboratory, University of Pennsylvania, Philadelphia, Pa.

**TO CONTRIBUTORS.** All contributions will be considered and passed upon at our earliest convenience and, as far as may be, will be published according to date of reception. The receipt of all papers will be acknowledged. Owing to the limited size of each number of the NEWS, articles longer than six printed pages will be published in two or more installments, unless the author be willing to pay for the cost of a sufficient number of additional pages in any one issue to enable such an article to appear without division.

Proof will be sent to authors. Twenty-five "extras" of an author's contribution, without change in form and without covers, will be given free when they are wanted; if more than twenty-five copies are desired *this should be stated on the MS.*

Owing to increased cost of labor and materials, no illustrations will be published in the NEWS for the present, except where authors furnish the necessary blocks (or pay in advance the cost of making blocks) and also pay for the cost of printing plates. Information as to the cost will be furnished in each case on application to the Editor. Blocks furnished or paid for by authors will, of course, be returned to authors, after publication, if desired.

---

**Stated Meetings** of The American Entomological Society will be held at 8.00 P. M., in 1935, on the fourth Thursday of each month excepting June, July, August, November and December, and on the third Thursday of November and December.

Communications on observations made in the course of your studies are solicited; also exhibits of any specimens you consider of interest.

---

The printer of the "News" will furnish reprints of articles without covers over and above the twenty-five given free at the following rates: One or two pages, twenty-five copies, 35 cents; three or four pages, twenty-five copies, 70 cents; five to eight pages, twenty-five copies, $1.40; nine to twelve pages, twenty-five copies, $2.00; each half-tone plate, twenty-five copies, 30 cents; each plate of line cuts, twenty-five copies, 25 cents; greater numbers of copies will be at the corresponding multiples of these rates. Printed covers for 50 copies, $4.00 or more, according to number of pages bound.

# ENTOMOLOGICAL NEWS

VOL. XLVI. NOVEMBER, 1935 No. 9

## Notes on Acrydium and the Actual Status of Three Supposedly American Species (Orthoptera, Acrididae, Acrydiinae).

By MORGAN HEBARD, Philadelphia, Pennsylvania.

In 1909 J. L. Hancock described three species and two varieties of the Acrydiinae from North America,[1] the first species of which he noted as "Amer. b.", the material being from the Saunders Collection, presented to the University Museum, Oxford, by Mrs. F. W. Hope. Part of this series is now in the author's collection and the carelessly written labels have been deciphered as all "Amur 1." Further study proves beyond question that a painful mistake was made, the series not coming from North America but from eastern Asia.

Comparison with our series of Asiatic Acrydiinae shows that, in consequence, nothing but synonyms were erected.

Hancock's *T[etrix] americana* (page 414) was based on two females and his *T[etrix] americana dimorpha*[2] (page 415) on four examples, one of these paratypes, a male, being in the author's collection. This male agrees competely with a male in the same collection, collected at Khabarowka on the Amur in May by Paraschine. We have also a female (likewise abbreviate) bearing the same data; a male (abbreviate) from Chilok, Transbaikalia; a male (abbreviate) labelled "Siberia" received in exchange from the Geneva Museum determined as, and probably from the same series as the type of, *Tettix sibiricus* Bolivar, 1887, and three females (abbreviate) from near Kartun in the District of Vladivostok. These names of Hancock's are synonyms of *Acrydium sibiricum* (Bolivar). His description of *americanum* is vague and misleading, evidently based

[1] Trans. Ent. Soc. London, 1909, pp. 414 to 417.
[2] Admittedly merely the abbreviate condition of the same species.

on more than one specimen, though the contrary was stated. The vertex is not at all like that of *A. granulatum* (= *subulatum*), as it is not triangularly produced and has the median carina briefly projecting, the frontal costa is not at all, or scarcely, excavate between the eyes in lateral profile and projects just sufficiently to be visible for some distance when the insect is examined from directly above.

Hancock's *Nomotettix validus* (page 415) was based on two females, the paratype being in the author's collection. Compared with a large European series of *Tetrix kraussi* Saulcy, 1888, it shows no difference suggesting even racial separation and we therefore place that name as a synonym of *Acrydium kraussi* (Saulcy).[3]

Hancock's *N*[*omotettix*] *arcticus*, based on two females of which the paratype is in the author's collection and *N*[*omotettix*] *arcticus obtusus*,[4] based on a single male, are found from comparison with a large European series to be referable to *G*[*ryllus*] [*Bulla*] *bipunctatus* Linnaeus, 1758. These names, therefore, fall in synonymy under *Acrydium bipunctatum* (Linnaeus). Not only are the antennal joints more elongate than in *kraussi*, but the pronotum has its cephalic margin less produced (transverse to weakly obtuse-angulate) and the form is usually (but not always) less robust. The caudate female has the pronotal keel very high for this insect, but the vertical distance from the shoulder to its summit is considerably less than the depth of a lateral lobe.

In working out the above synonymy we had supposed that Bei-Bienko's "Notes on the Siberian Representatives of the Genus *Acrydium*" [5] would be of great value. Unfortunately that study proves to be superficial and unsatisfactory. The first species considered is, from material before us, clearly a member of the genus *Paratettix*. The first section of the key,

[3] Racial status under *bipunctatum* was suggested by Hebard in 1925 (Trans. Amer. Ent. Soc., LI, p. 37), but intergradation is not indicated in any of the one hundred and nine specimens now in the Philadelphia collections.

[4] Also merely the abbreviate condition of the same species.

[5] Eos, V, pp. 365 to 373, (1929).

whether the pronotum is abbreviate or caudate (accompanied by a corresponding development of the wings) is well known to occur very frequently in the Acrydiinae and is a feature of mere individual variation of no specific or racial importance whatever. The repeated use of "f. *macroptera*" is contrary to the generally accepted rules of nomenclature and to the International Code.

The treatment of the few specimens he had from eastern Siberia is particularly faulty. The assumption of racial status for a single female of *sibiricum* from the Vladivostok District, named *sibiricum ussurianum*, is unjustified, the differences noted being very probably wholly attributable to individual variation, which we believe will be conclusively demonstrated by series from that region.

His description of *Acrydium simulans* (page 366, fig. 1) and *Acrydium amurense* (page 368, figs. 3 and 4) shows little knowledge of the genus, for both are probably synonyms of *Acrydium tartarum* (Bolivar), 1887, such differences as are noted being probably again attributable to individual variation. The following material of *tartarum* (a species never mentioned by Bei-Bienko) in the author's collection has been carefully compared with these descriptions. Sarafshan, Turkestan, 1 ♂ (abbreviate), originally labelled *tartarum* by Saussure as was the type described by Bolivar, received in exchange from the Geneva Museum. Tashkent, Turkestan, 1 ♂, 2 ♀, (abbreviate). Kokand, Turkestan, 3 ♂, 1 ♀ (male caudate, the others abbreviate). In addition there is an abbreviate male from eastern Siberia, received as a gift from Saussure by the Academy of Natural Sciences.

In these specimens the frontal costa is not visible from above in all but the last specimen (in which it can be seen from that angle as in the type of *amurense*, but the head is slightly uptilted in the former as is probably the case with the latter specimen). The pronotum has its cephalic margin strongly angulate produced, its longitudinal keel very high and nearly or quite equal to the depth of a lateral lobe, the lateral lobes have the lower sinus rectangulate to slightly obtuse-angulate, the median femora have their margins weakly undulate and the caudal metatarsus has the first pulvillus the shortest.

Finally we believe that his assertion that *Acrydium bipunctatum* (Linnaeus) may not occur in eastern Siberia is unwarranted.

Comparison of the species of the New and Old Worlds has produced some other surprising and interesting results.

The most astonishing of these is the fact that the widespread boreal North American insect, known as *Acrydium granulatum* Kirby since its description in 1937, proves to be the identical species as *Acrydium subulatum* (Linnaeus) described in 1761 and heretofor supposed to be a widespread boreal species confined to the Old World.

The New World boreal *Acrydium acadicum brunneri* (Bolivar) shows nearest affinity to that species followed by the New World boreal *Acrydium acadicum acadicum* (Scudder). In the Old World almost corresponding positions in that fauna are taken by *Acrydium kraussi* (Saulcy), *Acrydium bipunctatum* (Linnaeus) and its very close relative *Acrydium sibiricum* (Bolivar). The less boreal North American *Acrydium ornatum* Say finds its corresponding Old World relative in the less boreal *Acrydium ceperoi* (Bolivar).

Of the remaining Old World species the less boreal European *Acrydium turki* (Krauss), the closely related eastern Asiatic *Acrydium japonicum* (Bolivar), both of which apparently belong to a branch from the *bipunctatum* stem, and the very distinctive European and western Asiatic *Acrydium depressum* (Brisout) have no counterpart in the New World, but in eastern Asia *Acrydium tartarum* (Bolivar) apparently takes the place of the New World genus *Nomotettix*.

All of these species are represented in the Philadelphia collections. Without material it appears probable that *Acrydium kiefferi* (Saulcy) is a response to certain conditions of local environment developed either in *bipunctatum* or *kraussi*, or is intermediate and based on material indicating that the latter is a geographic race of the former.

It is almost certain that *Acrydium bolivari* (Azam) 1901 is a synonym of *subulatum*, based on individuals which have the vertex least projecting. Both Saulcy and Azam ignored the

fact that caudate, abbreviate and all intermediate conditions of pronotal and wing development are a matter of mere individual variation frequently occurring in many species of the Acrydiinae. The past literature is unfortunately filled with names improperly proposed for such individual variations having no racial or specific significance whatever, as well as for color phases which in the Acrydiinae have been proven to be nothing more than Mendelian factors.

In considering these species one is struck by the number from the Old World in which the vertex is less and the frontal costa is more projecting, so that the latter is visible in direct dorsal aspect, a feature not shown by any of those from the New World.

## A List of the Ants of Oklahoma (Hymen.: Formicidae).

By M. R. Smith, Department of Entomology, Mississippi State College, State College, Miss.

Although the ant fauna of Texas, New Mexico, and Arizona seems to be rather well known, that of Oklahoma, unfortunately, has been neglected by myrmecologists. The following list has, therefore, been prepared by the writer with the idea of filling as much as possible this gap in our knowledge of North American ants. The state should be an unusually interesting collecting ground for myrmecologists, because it is here that many of the eastern and western ants meet. In addition, the various topographical regions should contain very characteristic species. So far as the writer is aware, only two ants have been described from Oklahoma, and these only within the last year. The two species referred to are *Aphaenogaster treatae* subsp. *pluteicornis* and its variety *oklahomensis*.

According to H. H. Lane, in the Naturalist's Guide to the Americas, the state is considered largely an oak grove savannah. It contains four mountainous uplifts as follows: the Ozarks, the Arbuckles, the Ouachita and Wichita mountains. The re-

mainder of the state is rolling country with the following distinguishable topographical regions: the Lower Arkansas River Valley, the Prairie Plains, the Sandstone Hills, the Redbeds Plains, the Gypsum Hills, the Sand Desert, and the High Plains.

Most of the records given in this list are based on collections made in the southern part of the state, but particularly the southwestern (the Wichita Mountains and Wichita National Park). The northern half of the state is scarcely represented at all. The collections have been made principally by the Department of Zoology of the University of Oklahoma, the Department of Entomology of the Oklahoma Agricultural College, T. F. McGehee of the U. S. Bureau of Entomology in the Argentine ant scouting work, and the Department of Biology of the Oklahoma College for Women, as well as a small amount of collecting done by private individuals.

For the sake of brevity, only the collectors' initials will be given following the various locality records. The collectors responsible for this list are L. Barnard, R. D. and Lois Bird, W. J. Brown, A. C. Burrill, J. R. Carpenter, O. K. Chandler, J. Costner, W. D. Davis, C. C. Deonier, Wilton Fisher, H. M. Hefley, A. E. Hixson, E. E. Ivy, W. E. Jackson, C. R. Jones, T. F. McGehee, J. R. McInnis, J. D. Mitchell, A. E. Pritchard, P. D. Sanders, Martha Shackleford, Vera G. Smith, C. A. Sooter, O. Sundoz, G. C. and E. W. Wheeler, and P. Zeigler.

Subfamily *Ponerinae*.

STIGMATOMMA PALLIPES (Haldeman). This ant should be found in Oklahoma as it occurs in several of the adjoining states.

PROCERATIUM CROCEUM (Roger). Since this species has been recorded from Kansas and Texas it undoubtedly must occur in Oklahoma.

1. PONERA TRIGONA var. OPACIOR Forel. Wichita National Forest (W. F.); Beckham and Comanche counties (W. F.).

P. COARCTATA subsp. PENNSYLVANICA Buckley. This

species should be found in the more northern section of the state.

P. OPACICEPS Mayr. This ant should be found in the southern part of the state.

Subfamily *Dorylinae*.

ECITON (L.) COECUM (Latreille). This species may range into the extreme southern part of the state.

2. E. (A.) OPACITHORAX Emery. Payne county (E. H.).
3. E. (A.) SCHMITTI Emery. Wichita National Forest (W. F.); Norman (W. F.). This is probably the most common legionary ant in Oklahoma.
4. E. (A.) PILOSUS F. Smith. Latimer county (W. F.).

E. (A.) NIGRESCENS (Cresson). This species is recorded from Kansas and Texas and therefore one should expect to find it in Oklahoma.

5 E. (A.) COMMUTATUM Emery. Wichita National Forest (W. F.).

6 E. (A.) MELSHEIMERI (Haldemann). Latimer county (W. F.).

Subfamily *Myrmicinae*.

7. MONOMORIUM MINIMUM Buckley. Chickasha (V. G. S.); McAlester, Clinton, Altus, Lawton, Ardmore, Hugo, Idabel (T. F. McG.); Wichita National Forest, Norman (W. F.); Cherokee (R. D. B.); Latimer, Beckham, Cotton, Harmon, Jackson, Cleveland, Washita counties (W. F.). The tiny black ant is a common house-infesting form.

M. PHARAONIS (Linnaeus). Pharoah's ant should occur in the larger towns in the state. It is especially troublesome in cafes, hotels, warehouses, groceries and apartment houses.

8. SOLENOPSIS MOLESTA (Say). Chickasha (M. W. S.); Latimer county (W. F.). The tiny thief ant is an important house-infesting ant also.

S. TEXANA Emery. This species no doubt occurs in Oklahoma as it has been found in Kansas and Texas.

9. S. XYLONI McCook. Lindsay, Chickasha, Anadarko, Clinton, Hobart, Frederick, Snyder, Ardmore, Madill, Durant, Hugo, Valliant, Idabel (T. F. McG.); Wichita National Forest (W. F.); Cotton, Washita, Johnston, Tillman, Jackson, Comanche and Latimer counties (W. F.). The fire ant is a very serious pest wherever it occurs.
10. PHEIDOLE VINELANDICA Forel. Chickasha (V. G. S.); Madill (T. F. McG.); Wichita National Forest (W. F.).
11. PH. DENTATA Mayr. McAlester, Mangum, Lawton (T. F. McG.); Cherokee (R. D. B.); Wichita National Forest (W. F.); Latimer county (W. F.); Major and Woods counties (R. D. B.).

    PH. DENTATA var. COMMUTATA Mayr. This variety of *dentata* should occur in the State.

    PH. PILIFERA (Roger). This ant undoubtedly occurs in the State.
12. PH. HYATTI Emery. Chickasha, Altus, Snyder, Lawton, Ardmore (T. F. McG.); Wichita National Forest (W. F.); Cotton county (W. F.).
13. PH. COCKERELLI Wheeler. Beckham county (W. F.).
14. PH. SITARCHES subsp. RUFESCENS Wheeler. Wichita National Forest (W. F.); Beckham, Latimer, and Harmon counties (W. F.).
15. MYRMECINA GRAMINICOLA subsp. AMERICANA Emery. Latimer county (R. D. B.).
16. CREMATOGASTER ASHMEADI Mayr. Latimer and Jackson counties (W. F.).
17. C. VICTIMA subsp. MISSOURIENSIS Pergande. Chickasha (M. W. S.); Wichita National Forest (W. F.); Latimer county (W. F.); McClain county (J. R. C.).

    C. LAEVIUSCULA Mayr. Since the variety *clara* of this species is so common in Oklahoma, *laeviuscula* should also be found in the state.
18. C. LAEVIUSCULA var. CLARA Emery. McAlester, Coalgate, Ada, Pauls Valley, Lawton, Durant, Hugo, Valliant (T. F. McG.); Wichita National Forest (W. F.); Norman

(R. D. B.); Cleveland county (R. D. B.); Latimer, Greer and Cotton counties (W. F.); Logan and Woods counties (R. D. B.); Payne county (W. J. B.); Stillwater (L. B.).

19. C. LINEOLATA (Say). Latimer county (R. D. B.); McClain county (J. R. C.).
20. C. LINEOLATA var. CERASI Fitch. Major county (R. D. B.).
21. C. OPACA DEPILIS var. PUNCTULATA Emery. Idabel (T. F. McG.); Chickasha (M. W. S.); Wichita National Forest (W. F.); Beckham, Cotton, Harmon, Logan, Kiowa, Jackson, and Comanche counties (W. F.); Wood county (R. D. B.); McClain county (J. R. C.).

APHAENOGASTER FULVA Roger. This species and its subspecies *aquia* and variety *picea* should be found in Oklahoma.

22. A. TREATAE Forel. Latimer county (W. F.); Woods county (R. D. B.); Wichita National Forest (W. F.).
23. A. TREATAE subsp. *pluteicornis* G. C. and E. W. Wheeler. Poteau (G. C. and E. W. Wheeler) *type locality*.
24. A. TREATAE PLUTEICORNIS var. OKLAHOMENSIS G. C. and E. W. Wheeler. Poteau (G. C. and E. W. Wheeler) *type locality*.
25. A. TENNESSEENSIS Mayr. Latimer county (W. F.); Caddo county (O. S.).

A. TEXANA Emery. This species should be found in Oklahoma.

26. A. TEXANA var. CAROLINENSIS Wheeler. Latimer county (W. F.).
27. POGONOMYRMEX BARBATUS var. MOLEFACIENS Emery. Norman (J. R. McI.); Pauls Valley, Anadarko, Snyder (T. F. McG.); Wichita National Forest (W. F.); Beckham, Harmon, Cleveland, Kiowa, and Cotton counties (W. F.); Payne, Latimer, Woods, Jefferson, and Jackson counties (W. D. D.); Stillwater (C. A. S.).
28. P. OCCIDENTALIS Cresson. Clinton (T. F. McG.); Cherokee (R. D. B.); Washita, Kiowa and Greer counties (W. F.); Kenton (A. E. P.).

29. P. DESERTORUM Wheeler. Cotton county (W. F.).
30. P. (E.) IMBERBICULUS Wheeler. Wichita National Forest (W. F.); Harmon county (W. F.).
31. MYRMICA PUNCTIVENTRIS subsp. PINETORUM Wheeler. Latimer county (R. D. B.).
32. LEPTOTHORAX TEXANA Wheeler. Wichita National Forest (W. F.); Harmon and Latimer counties (W. F.).

L. CURVISPINOSUS Mayr. This widely distributed North American ant should occur in Oklahoma.

33. L. FORTINODIS Mayr. Jefferson county (W. F.).
34. L. (D.) PERGANDEI Emery. Wichita National Forest (W. F.); Chickasha (M. W. S.); McClain county (J. R. C.).

TRACHYMYRMEX SEPTENTRIONALIS subsp. OBSCURIOR. Wheeler. This species will very probably be found in the state.

35. T. SEPTENTRIONALIS OBSCURIOR var. SEMINOLE Wheeler. Wichita National Forest (W. F.); Latimer, Beckham, Cotton, and Harmon counties (W. F.).

Subfamily *Dolichoderinae*.

36. DOLICHODERUS (H.) MARIAE Forel. Major county (R. D. B.).
37. D. (H.) PLAGIATUS subsp. PUSTULATUS Mayr. Norman (P. Z.).
38. DORYMYRMEX PYRAMICUS (Roger). Clinton, Frederick, Durant (T. F. McG.); Wichita National Forest (W. F.); Beckham, Latimer, Washita, Tillman, Harmon, Kiowa Woods, and Commanche counties (W. F.); McClain county (J. R. C.).
39. D. PYRAMICUS var. FLAVUS McCook. Lindsay, Chickasha, Clinton, Altus, Madill, Durant, Idabel, (T. F. McG.); Wichita National Forest (W. F.); Beckham, Cleveland, Tillman, Greer, Kiowa, Harmon, Jefferson and Comanche counties (W. F.); Woods county (R. D. B.).
40. TAPINOMA SESSILE (Say). Woods county (R. D. B.); Oklahoma county (L. B.); Cleveland county (W. F.). The odorous house ant is a pest wherever it occurs.

41. FORELIUS sp. McAlester, Coalgate, Clinton, Altus, Frederick, Lawton, Ardmore, Madill (T. F. McG.); Wichita National Forest (W. F.); Cotton, Logan, Washita, Cleveland, Harmon, Comanche and Jefferson counties (W. F.).

42. IRIDOMYRMEX PRUINOSUS var. Wichita National Forest (W. F.); Beckham, Tillman, Comanche, Washita, Logan Harmon, and Latimer counties (W. F.); Cleveland county (H. M. M.); McClain county (J. R. C.).

(To be continued).

## Notes on Utah Scarabaeidae and Chrysomelidae (Coleoptera).[1]

By G. F. KNOWLTON and C. F. SMITH.

This report deals with records of Scarabaeidae and Chrysomelidae,[2] a number of which injure range and cultivated plants. The writers are indebted to Messrs. E. A. Chapin, W. S. Fisher, and H. S. Barber of the U. S. Bureau of Entomology and Plant Quarantine, and L. W. Saylor of the University of California, for identifying the material.

Family SCARABAEIDAE.

CANTHON SIMPLEX Lec. Heber and Daniel Canyons, July 16, 1931; Fruitland, May 29, 1933; Logan (L. Green).

APHODIUS DENTICULATUS Hald. Farmington, June 7, 1933; Jensen; Promontory, April 17, 1931 (Knowlton: M. J. Janes).

A. FIMETARIUS (L.). Kanab, July 9, 1932; Logan, October 11, 1926 (F. Clarke); April 12, 1931 (W. L. Thomas), September 21, 1933 (T. O. Thatcher).

A. GRANARIUS (L.). Blue Creek, June 12 and 28, 1929; Collinston; Richardson, May 15, 1933 (H. B. Stafford).

A. CONSOCIATUS Horn. Strawberry, June 11, 1934 (E. W. Anthon).

A. DISTINCTUS (Mull.). Blue Creek, April 16, 1929; Logan, March 30, 1930; Promontory (Knowlton::Janes); Saratoga.

[1] Contribution from the Department of Entomology, Utah Agricultural Experiment Station. Authorized for publication by Director, May 3, 1935.

[2] Unless otherwise indicated, localities are in Utah and collections are by G. F. Knowlton.

ODONTAEUS OBESUS Lec. Fort Duchesne, August 6, 1932 (L. Cutler). Also at Lorenzo, Idaho, August 1, 1931 (Thomas); and Lamoille Canyon, Nevada, June 15, 1934 (Stafford).

TROX LECONTEI Harold. Far West, October 26, 1931 (Cutler); Fruitland, May 20, 1933.

DIPLOTAXIS SUBANGULATA CALIFORNICA Schffr. Trout Creek, July 25, 1933 (Stafford).

D. BREVICOLLIS Lec. Cache National Forest, June 15, 1932 (G. Van Buren). Also at Lorenzo, Idaho, June 5, 1931 (Thomas).

PHYLLOPHAGA ANIXIA Lec. Logan, July, 1915 (H. R. Hagan); Springville (Anthon).

POLYPHYLLA DECEMLINEATA (Say). Fort Duchesne, July 27, 1931 (Cutler); Logan (B. G. Whitaker); Springville (Anthon).

P. RUFICOLLIS CASTANEA Csy. Logan, July 21, 1923.

DICHELONYX MORMONA Fall. Logan Park, July 10, 1908 (J. R. Horton); Providence and Provo, June 7, 1933; Sardine Canyon (Thomas).

D. TRUNCATA Lec. Logan, June 28, 1904. Also at Ontario, Oregon, April 21, 1905 (Ball).

HOPLIA LATICOLLIS Lec. Fort Duchesne, July 7, 1931 (R. L. Janes).

COTALPA FLAVIDA Horn. Thompsons, August 9, 1906 (E. G. Titus); West Water.

POCALTA GRANICOLLIS (Hald.). Curlew and Garland, April 1930; Logan (Stoffers, Whitaker); Promontory; Snowville.

SPILOSOTA PALLIDISSIMA Csy. Washington, June 25, 1933.

LIGYRUS GIBBOSUS (DeG.). St. George, July 9, 1934 (Knowlton::C. F. Smith).

EUPHORIA RUFOBRUNNEA Csy. Logan, May 6, 1932 (Whitaker); September 30, 1932 (Thatcher).

CREMASTOCHEILUS PUGETANUS Csy. Bothwell, May 15, 1931.

C. KNOCHI Lec. Hyrumn, May 20, 1933 (M. J. Janes); Logan Canyon (Knowlton::Anthon).

Family CHRYSOMELIDAE.

ORSODACNE ATRA (Ahr.). Logan, August 3, 1933 (Thatcher).

LEMA TRILINEATA TRIVITTATA Say. Farmington, July 23, 1930 (Janes); Lewiston; Logan (Thomas); Murray; Sandy; Smithfield.

COSCINOPTERA DOMINICANA (Fab.). Logan.

C. VITTIGERA Lec. Fort Duchesne, July 20, 1932 (Cutler).

SAXINIS SAUCIA Lec. Logan, July 5, 1931 (Thomas).

CHLAMYS MEMNONIA Lac. Fort Duchesne, June 13, 1932 (Stoffers).

PACHYBRACHYS ANALIS Lec. Kanab, June 26, 1933.

P. ABDOMINALIS (Say). Moroni, June 28, 1933.

P. VAU Fall. Stansbury Island, May 31, 1933 (Knowlton:: Anthon).

CHRYPTOCEPHALUS CONFLUENS Say. Marysvale and Mt. Carmel, June 25, 1933.

C. CONFLUENS var. DEFECTUS Lec. (?). Logan, June 17, 1931 (Thomas).

C. PINICOLUS Schffr. Farmington, June 24, 1933.

GLYPTOSCELIS ALTERNATA Cr. Northern Utah.

CHRYSOCHUS COBALTINUS Lec. On sugar-beets, Lehi, July 7, 1927; Ogden, May 12, 1927.

ZYGOGRAMMA EXCLAMATIONIS (Fab.). Blacksmith Fork Canyon, August 18, 1925.

Z. CONJUNCTA Rogers. Mills, May 25, 1933; Jensen, on poverty weed, July 12, 1931; St. George; on *Sophia sophia*, Kelton; Fort Duchesne; on *Atriplex*, Promontory.

CALLIGRAPHA SIGMOIDEA Lec. Logan, November 8, 1930 (Thomas). Also Wells, Nevada, July 20, 1912 (Ball).

LINA SCRIPTA (Fab.). Bountiful, June 21, 1929 (Pack); Watson, July 30, 1927 (H. J. Pack).

TRIRHABDA NITIDICOLLIS Lec. Randlett, July 14, 1927.

T. LEWISI Cr. Clear Creek, July 1, 1926. Also McKinnon, Antelope, and Lyman, Wyoming, August 4, 1932 (Knowlton:: Janes).

GALERUCELLA NOTULATA (Fab.). Manti, July 26, 1927.

MONOXIA EROSA Lec. Corinne, April 9, 1930; Granger, July 2, 1930; Hot Springs, September 17, 1930; Ioka (Cutler); Manti; Salt Lake City; on *Cheirina repanda*, Timpie; Weber (Janes); Willow Springs.

M. DEBILIS Lec. On *Sophia sophia*, Snowville, July 15, 1930.

DIABROTICA TRICINCTA (Say). Douglas, Arizona, September 20, 1924 (W. W. Henderson).

SCELOLYPERUS LONGULUS (Lec.). Bountiful, June 10, 1929 (Pack).

DISONYCHA PENNSYLVANICA (Ill.). Logan.

D. UNIGUTTATA (Say). Joseph, September 25, 1929.

D. LATIFRONS Schffr. Snowville, April 17, 1931.

D. PLURILIGATA Lec. Orderville, June 27, 1933; Hyrumn.

D. TRIANGULARIS (Say). Honeyville, September 15, 1930;

Logan Canyon (Hagan); on sugar-beets, Monroe, June 30, 1926.

HALTICA BIMARGINATA Say. Logan, April 27, 1929.

CHALCOIDES FULVICORNIS nana Say. On sugar-beets, Ogden, June 9, 1927.

CHAETOCNEMA CONFINIS Cr. On sugar-beets, Cache Junction, August 18, 1927.

SYSTENA TAENIATA (Say), Elsinore, July 26, 1927; on Russian thistle, Snowville; Stansbury Island (Titus::Hagan:: Pack).

S. BITAENIATA (Lec.). Bluff, June 19, 1933; on beets at West Point, Garland, Plain City, and Ogden.

PSYLLIODES PUNCTULATA Melsh. On mustard and Russian thistle, at Cedar Valley, Elsinore, Nephi, and Snowville, July, 1927; on sugar-beets throughout central and northern Utah.

CHELYMORPHA CASSIDEA (Fab.). Bountiful, May 11, 1929 (Pack).

JONTHONOTA NOVEMMACULATA (Mann.). Logan, February 4, 1933 (Thatcher).

CHIRIDA GUTTATA (Oliv.). Logan, July 2, 1930 (Linford).

C. GUTTATA var. LUCIDULA (Boh.). Logan, July 2, 1931 (Linford.).

## Synonymical Notes on the Fossorial Wasps (Hymenoptera: Sphecidae, Pompilidae and Tiphiidae).

By V. S. L. PATE, Cornell University, Ithaca, New York.

Several generic names that have apparently been overlooked or misunderstood by Hymenopterists and bibliographers alike have recently been discovered while searching the literature for designations of the genotypes of Sphecoid wasps. Unfortunately, several of those discussed below will invalidate long and well established names if one adheres strictly to the tenets of the International Code of Zoological Nomenclature. Careful study and perusal of the vast accumulation of literature that has appeared since the time of Linnaeus are constantly revealing a large number of disregarded or overlooked names. Adoption of long forgotten names, however, serves no good or useful purpose. It merely emphasizes that taxonomy is one

of the few, if not the sole remaining field of human endeavour wherein a premium is placed upon poor work. It becomes more obvious every day that, if we are ever to achieve anything which resembles stability rather than the state of flux in which we are at present mired, there must be some provision whereby a name, after a certain period of accepted usage, automatically becomes a *nomen conservandum* should there ever be unearthed an earlier name which would invalidate it.

PEMPHILIS Risso 1826.

= *Crabro* Fabricius 1775, *nec* Geoffroy 1762; = *Thyreopus* Le Peletier & Brullè 1834. *Type: Vespa cribraria* Linnaeus 1758 (by present designation).

In 1826 J. A. Risso published a five volume work entitled: "Histoire naturelle des principales productions de l'Europe méridionale et principalement de celles des environs de Nice et des Alpes maritimes." Pages 187 to 257 of the fifth volume are devoted to a list of the various insects of this region and on page 227, following a list of the species of *Crabro,* occurs the name *Pemphilis* coupled with two species as follows: *Pemphilis palmata* Leach, *Pemphilis patellatus* Fabricius. The first species, *P. palmata* Leach = [*Crabro palmatus* Panzer], is a synonym of *Crabro cribrarius* (L.), the genotype of *Thyreopus* Lepeletier 1834 and *Crabro* Fabricius 1775. I have been unable to discover any species described by Fabricius under the name *patellatus;* it may be that Risso had in mind the *Crabro patellatus* described by Panzer in 1797. This latter is considered a synonym of *Crabro peltarius* Schreber. Consequently in view of the uncertainty of the identity of *Pemphilis patellatus* Fabricius as cited by Risso, I designate *Pemphilis palmata* Leach = [*Crabro palmatus* Panzer = *Vespa cribraria* L.], the type of the genus *Pemphilis* Risso. *Crabro* Fabricius 1775, *Thyreopus* Lepeletier 1834 and *Pemphilis* Risso 1826 are therefore isogenotypic. Should the International Commission on Zoological Nomenclature refuse to validate *Crabro* Fabricius 1775, the name *Pemphilis* will have to be used. Similarly the group of which this is the type genus will have to be known as the

Pemphiliidae or Pemphiliinae, a most unfortunate circumstance inasmuch as it differs in but one letter from a well known group of sawflies, the Pamphiliidae.

EUPLILIS Risso 1826.

= *Rhopalum* Kirby 1829; = *Physoscelus* Le Peletier & Brullè 1834. *Type: Sphex clavipes* L. 1758 (by present designation).

Immediately following *Pemphilis* on page 227, Risso couples the name *Euplilis* with two species as follows: *Euplilis dimidiatus* Leach, *Euplilis rufiventris* Panzer. The first of these is probably the *Crabro dimidiatus* of Fabricius, which Kohl in his revision of Crabro doubtfully indicates may be the proper name for *Crabro signatus* Panzer. The second, *Euplilis rufiventris* Panzer, is unquestionably the *Crabro rufiventris* of Panzer. I hereby designate *Euplilis rufiventris* Panzer = [*Crabro rufiventris* Panzer = *Sphex clavipes* Linnaeus] the genotype of *Euplilis* Risso. Inasmuch as Curtis in 1837 designated *Crabro rufiventris* Panzer as the genotype of *Rhopalum*, *Euplilis* Risso 1826 and *Rhopalum* Kirby 1829 are isogenotypic.

MONOMATIUM Shuckard 1840.

= *Larraxena* Smith 1851.

*Type: Larraxena princeps* Smith 1851 (by present designation).

In the eighth volume of Lardner's Cabinet Encyclopaedia published in 1840, Shuckard described very briefly, without including any species, several genera of Sphecoid wasps. Some of these, *e. g. Dicranorhina* and *Conocerus* have been identified by later authors, but one—*Monomatium*, characterized on page 181—has long remained a mystery. After careful study and consideration I feel safe in identifying this genus with *Larraxena* described by Frederick Smith in 1851 (Ann. & Mag. Nat. Hist. (2) VII:30), and hereby designate *Larraxena princeps* Smith as the genotype of *Monomatium* Shuckard. *Larraxena* Smith 1851 and *Monomatium* Shuckard 1840 are therefore isogenotypic.

[PRONAEUS Latreille 1809] = AMPULEX Jurine 1807.

Latreille proposed in 1809 (Gen. Crust. Insect. IV:56) the genus *Pronaeus,* including in it but one species *Dryinus aeneus* Fabricius which in 1810 he designated the type. *Pronaeus* has usually been considered to belong to the *Chlorion* complex (*s.s.*), in fact Kohl (Ann. naturalist. Hofmus. Wien, 1890, V:107) regards *Dryinus aeneus* Fabricius, somewhat doubtfully it is true, a synonym of *Chlorion xanthoceros* Illiger. However, Schulz (Berlin. Ent. Zeitschr., 1912, LVII:80) who examined Fabricius' type in the Copenhagen Museum found *Dryinus aeneus* Fabricius to be conspecific with *Ampulex dahlbomi* Kohl. *Pronaeus* Latreille 1809 must therefore be recorded as a synonym of *Ampulex* Jurine 1807.

CEROPALES Latreille 1796.

= *Ceratopales* Schulz 1906; *Hypsiceraeus* Morice & Durrant 1914.

*Type: Evania maculata* Fabricius (by designation of Latreille, 1810).

Latreille proposed the genus *Ceropales* in 1796 without including any species. The first coupling of any species with this name occurred in 1802. (Hist. Nat. Crust. Insect. III:335 & 340.) Most of the later authors, principally Morice & Durrant (1914), Bradley (1919), and Rohwer (1920) have considered that the only species first placed in the genus were *Mellinus quinquecinctus* Fabricius and *Mellinus campestris* Fabricius. Latreille, however, on page 335 (*op. cit.*), five pages before he formally discusses the genus *Ceropales,* makes the following statement under his discussion of the genus *Pompilus:* " . . . J'avois cru conséquemment devoir placer, dans mon genre *ceropales,* l'évanie tachetée de Fabricius et quelques autres. Je pense aujourd'hui qu'il est plus convenable de mettre ces insectes avec les pompiles . . ." I consider, therefore, that there were three species first coupled with the name *Ceropales* and that Latreille's designation in 1810 of *Evania maculata* Fabricius as the genotype of *Ceropales* is valid and entirely in accord with the provisions of the International Code

of Zoological Nomenclature. The name *Ceropales* must therefore without question be retained for the Pompilid genus, and may not be considered as isogenotypic with the Sphecid genus *Gorytes* Latreille. Although Morice and Durrant and Rohwer made a definite bibliographic citation to Latreille's remark on page 335, in fact the latter author discusses it at some length, both seem to have overlooked the fundamental and essential feature of it. *Hypsiceracus* Morice and Durrant 1914 and *Ceratopales* Schulz 1906 are isogenotypic with *Ceropales* Lattreille 1796.

GORYTES Latreille 1804.

The genus *Gorytes* was first erected by Latreille in 1804 (Nouv. Dict. Hist. Nat. XXIV: Tabl. meth. p. 180, nr. 434) with but one species—*Mellinus quinquecinctus* Fabricius—included. The genus is therefore monobasic and isogenotypic with *Hoplisus* Lepeletier 1832.

ARPACTUS Jurine 1801.

*Type: Sphex mystacea* L., 1761 (by designation of Morice & Durrant 1914).

I do not believe, as do some authors, that Latreille by placing *Mellinus quinquecinctus* Fabricius in his new genus *Gorytes* thereby *ipso facto* designated *Mellinus mystaceus* Fabricius [= *Sphex mystacea* L.] the type of *Arpactus* Jurine 1801 (v. Opinion 6, International Commission on Zoological Nomenclature). Latreille's writings give abundant evidence that he never knew Jurine's genera until the publication in 1807 of the latter's *Nouvelle Méthode*. Thus only by a casuistical interpretation of Opinion 6 can the dictum there expressed be made to apply to this case. The first valid designation of a type for *Arpactus* Jurine 1801 therefore apparently did not occur until Morice and Durrant in 1914 selected *Sphex mystacea* L.

[MUTILLONITELA Bridwell 1920] = SALIOSTETHUS Brauns 1896.

Bridwell proposed the genus *Mutillonitela* in 1920 (Proc.

Hawaii. Ent. Soc. IV:396) for two species of small wasps from South Africa. Recently I have had an opportunity to examine the types of these species in the United States National Museum and to compare them with specimens determined by Brauns as *Saliostethus lentifrons* Brauns, the genotype of *Saliostethus*. The three species are unquestionably congeneric. *Mutillonitela* Bridwell 1920 should therefore be recorded as a synonym of *Saliostethus* Brauns 1896.

[SHESTAKOVIA Gussakovskij 1930] = EREMIASPHECIUM Kohl 1897.

Gussakovskij proposed the genus *Shestakovia* in 1930 (Eos VI:275) for six species of small wasps from Transcaspia. His excellent descriptions and figures, however, coincide in all respects with specimens that I have before me determined by Kohl as *Eremiaspheciun schmiedeknechti* Kohl, the genotype of *Eremiaspheciun*. The two are unquestionably, I believe, congeneric. *Shestakovia* Gussakovskij 1930 therefore should be recorded as a synonym of *Eremiaspheciun* Kohl 1897.

TANYOPRYMNUS Cameron 1905.

= *Ceratostizus* Rohwer 1921.

*Type: Tanyoprymnus longitarsis* Cameron 1905 [= *Gorytes moneduloides* Packard 1867]. (monobasic).

Cameron in 1905 (Trans. Amer. Ent. Soc. XXXI:375) described the genus *Tanyoprymnus*, from Mexico, including in it but one species—*T. longitarsis* Cameron. Turner in 1912 (Ann. & Mag. Nat. Hist. (8) X:373) who had seen the type in the British Museum, called attention to the fact that this species should be placed in the genus *Ammatomus* A. Costa 1859 and ventured the opinion that *T. longitarsis* Cameron 1905 was the same as *Gorytes moneduloides* Packard 1867. I have compared specimens of *Gorytes moneduloides* with Cameron's description of *Tanyoprymnus longitarsis* and believe that they are unquestionably the same species. Inasmuch as *Gorytes moneduloides* Packard is the genotype of *Ceratostizus* Rohwer 1921, the latter genus must be considered an absolute synonym

(*i.e.* isogenotypic) of *Tanyoprymnus* Cameron 1905. *Ammatomus* is an old world group; in the New World it is replaced by *Tanyoprymnus*.

**EPINYSSON** new subgenus.

*Type: Nysson basilaris* Cresson (present designation).

A. Costa proposed in 1859 (Faun. Regn. Nap. Imen. Niss. p. 24) the genus *Brachystegus* with but one included species—*Nysson Dufouri* Dahlbom 1845 [= *Nysson scalaris* Illiger 1807]. Later authors, through error, have applied Costa's name to all those species of *Nysson* (*s.s.*) in which the cubitus of the hind wing arises beyond the transverse median nervure. *Brachystegus* Costa, however, is an old world group more closely related to the New World *Zanysson* Rohwer (= *Paranysson* auctt. *nec* Guerin) than to *Nysson* Latreille. Consequently for those species of *Nysson* Latreille in which the cubitus of the hind wing arises beyond the transverse median nervure, I propose a new subgenus—*Epinysson* [= *Brachystegus* auctt. nec Costa] with *Nysson basilaris* Cresson as type.

PRIONYX van der Linden 1827.

= *Enodia* Dahlbom 1844 *nec* Hübner 1816; = *Parasphex* Smith 1856.

*Type: Ammophila? Kirbii* van der Linden. (monobasic).

Dahlbom proposed the genus *Enodia* in 1844 (Hymen. Europ. I:28) for two species: *Sphex albisecta* Le Peletier & Serville [1828] = [*Ammophila? Kirbii* van der Linden 1827] and *Enodia canescens* Dahlbom 1844 [= *Sphex viduata* Christ 1791]. Smith in 1856, aware of the fact that Dahlbom's name was a homonym of Hübner's Satyrid genus proposed *Parasphex* (Catal. Hymen. Brit. Mus. IV:267) in lieu of *Enodia* Dahlbom 1844, placing therein the two species originally cited by Dahlbom and a third—*Parasphex marginata* Smith. Kohl in 1885 (Termész. Füzetek IX:164) designated *Sphex albisecta* Le Peletier & Serville as the type of the genera *Enodia* Dahlbom 1844 and *Parasphex* Smith 1856, thus making the latter an absolute synonym of the former from a nomenclatorial standpoint.

(To be continued)

# Entomological Literature

COMPILED BY LAURA S. MACKEY UNDER THE SUPERVISION OF E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The **figures within brackets** [ ] refer to the journal in which the paper appeared, as numbered in the list of Periodicals and Serials published in our January and June issues. This list may be secured from the publisher of ENTOMOLOGICAL NEWS for 10c. The number of, or annual **volume**, and in some cases the part, heft, &c. the latter **within** ( ) follows; then the pagination follows the **colon** :

All continued papers, with few exceptions, are recorded only at their first installments.

(*) Papers containing new forms or names not so stated in titles, have an * within parentheses thus (*) following the pagination of reference to paper.

(S) Papers pertaining exclusively to neotropical species, and not so indicated in the title, have the symbol (S) at the end of the title of the paper.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

**Note.** Titles of papers containing new forms or new names will be indicated by an asterisk within parentheses at end of reference, (*).

*Papers published in the Entomological News are not listed.*

## New Titles of Periodicals and Serials Referred to.

3. Annales Sci. Naturelles, Zoologie, Paris.
69. Physis. Revista Soc. Argentina Cien. Nat., Buenos Aires.
15. Annales Academia Brasileira de Sciencias. Rio de Janeiro.

**GENERAL.—Aldrich, J. M.**—Obituary by W. R. Walton. [10] 37: 53-59, ill. **Alfaro, A.**—Insectos dañinos. [Investig. Cientif.] 1935: 173-193. **Anon.**—Common names of insects approved by the American Association of Economic Entomologists. [12] 28: 726-727. **Davis, A. C.**—Note upon insects found in mushroom houses. [10] 36: 269. **Gilliatt, F. C.**—Some predators of the European red mite, Paratetranychus pilosus, in Nova Scotia. [Can. Jour. Res.] 13: 127-38, ill. **Heinrich u. Bandermann u. Nitsch.**—Aus der Praxis für die Praxis. Bekämpfung der Anthrenusplage in sammlungen. [18] 29: 225-227; 251-252; 262-263. **de Kerville, H. G.**—Description et figuration de neuf Arthropodes anomaux. [25] 40: 186-190, ill. **Myers, J. G.**—Nesting associations of birds with social insects. [36] 83: 11-22, ill. **Twinn, C. R.**—Records of Mallophaga and other external parasites from birds at Churchhill, Manitoba. [4] 67: 157-159. **Van Thiel, P. H.**—Insuffisance des caractères de l'oeuf pour la distinction des races trophiques et biologiques de l'Anopheles maculipennis? [Acta Leidensia] 9: 289-293. **Van Volkenberg, H. L.**—Biological control of an insect pest by a toad. [68] 82: 278-279.

**ANATOMY, PHYSIOLOGY, ETC.—Baker, F. C.**—The effect of photoperiodism on resting, treehole, mosquito larvae. [4] 67: 149-153. **Bugnion, E.**—Les organes buccaux des Cerambycides. [Mem. Soc. Vaud. Sc. Nat.] 5: 59-76, ill. **Blaustein, W.**—Histologische untersuchungen ueber die metamorphose der mehlmotte. [46] 30: 333-354, ill. **Bradley, G. H.**—The hatching of eggs of the southern buffalo gnat. [68] 82: 277-278. **Brueckner, W. R.**—Geschlechtsorgane und eibildung des neuropters Chrysopa vulgaris. [Jenaische Zeit. Naturw.] 69: 469-506, ill. **Buxton, P. A.**—Changes in the composition of adult Culex pipiens during hibernation. [116] 27: 263-265. **Carter & Schmidt.**—Mass action phenomena in mealy-bug wilt. [7] 28: 396-403, ill. **Chopard, L.**—Une idee nouvelle sur le polymorphisme specifique les phases chez les insectes Orthopteres [Rev. Francaise d'Ent.] 2: 57-61. **Cushman, R. A.**—A study of the larva of Larra analis. [10] 37: 82-87, ill. **Gossel, P.**—Beiträge zur kenntnis der hautsinnesorgane und hautdrüsen der Cheliceraten und der augen von Ixoden. [46] 30: 177-205, ill. **Grandi, G.**—Morfologia ed etologia comparata di insetti a regime specializzato. [Mem. Ac. Sci. Inst. Bologna] 9: 41-48, ill. L'ipermetabolia nei lepidotteri. [Mem. Ac. Sci. Inst. Bologna] 10: 35-39, ill. **Guarino, L.**—Osservazioni sull'armatura genitale degli Acrididi. [Arch. Zool. Italeno] 21: 427-446, ill. **Hickman, C. P.**—External features of the larva of Hydromyza confluens (Diptera). [Proc. Ind. Ac. Sci.] 44: 212-216, ill. **Ide, F. P.**—The effect of temperature on the distribution of the mayfly fauna of a stream. [Univ. Toronto, Biol. Ser.] No. 39: 3-76. **Ilse, D.**—Ueber das sehen der insekten besonders der tagfalter. [Sitz. Ges. Naturf. Fr. Berlin] 1934: 1-18. **Johnson, H. A.**—The effect of high temperatures on the length of life of certain sps. of mosquitoes. [Jour. Ten. Ac. Sci.] 10: 225-227. **Jordan, K. H. C.**—Beitrag zur lebensweise der wanzen auf feuchten böden. [60] 96: 1-26, ill. **Keil, I.**—Ergebnisse aus der kreuzung parthenogenetischer und zweigeschlechtlicher schmetterlinge. II. [Rev. Suisse Zool.] 42: 427-443. **Keilin, Tate & Vincent.**—The perispiracular glands of mosquito larvae. [116] 27: 257-262, ill. **Machotin, A.**—Ueber die morphologische bedeutung der anhänge des IX hinterleibsringes mannlichen Libellen. [Zoologitscheskij Jour.] 13: 639-663, ill. [in Russian with German summary). **Madsen & Knowlton.**—Mosquito transmission of equine encephalomyelitis. [Jour. Am. Vet. Med. Assoc.] 86: 662-666. **Maloeuf, N. S. R.**—The myogenic

automatism of the contraction of the heart of insects. [7] 28: 332-337, ill. **Marshall, J.**—The location of olfactory receptors in insects: a review of experimental evidence. [36] 83: 49-72. **McIndoo, N. E.**—The relative attractiveness of certain solanaceous plants to the Colorado potato beetle, Leptinotarsa decemlineata. [10] 37: 36-42, ill. **Uchida, H.**—Color changes in the eye of a long-horned grasshopper, Homorocoryphus lineosus in relation to light. [Jour. Imp. Univ. Tokyo] Zool. 3: 517-525, ill. **Vimmer, A.**—Ueber den mittelzahn der jüngsten dipterenlarven und ueber die nebenstigmen der dipterenpuppen aus der gruppe Brachycera cyclorrhapha. [Casopis] 31: 77-81. **Weil, E.**—Vergleichend-morphologische untersuchungen am darmkanal einiger Apiden und vespiden. [46] 30: 438-478, ill. **Wigglesworth, V. B.**—Functions of the corpus allatum of insects. [31] 136: 338-339. **Yamada, T.**—Studies on a peculiar oscillatory movement of the larva of the ramie moth, Arcte coerulea [Mem. Coll. Sci. Kyota Imp. Univ.] 9 (B): 1-45, ill. **Ying-Tou Mao.**—Morphology and anatomy of the scarabaeid beetle. [Pekin Nat. Hist. Bull.] 9: 299-323, ill.

**ARACHNIDA AND MYRIOPODA.—Bryant, E. B.**—A few southern spiders. [5] 42: 73-83, ill. (*). **Ewing & Smith**—The European tarsonemid strawberry mite identical with the American cyclamen mite. [10] 36: 267-268. **Jacot, A. P.**—Two unrecorded subsps. of mossmites (Acarina) from the northeastern U. S. [10] 36: 259-261. **Kintner, E.**—Some spiders of the genus Tetragnatha. [Proc. Ind. Ac. Sci.] 44: 207-209. **Leitao, M.**—Novo Pedipalpo do Brasil. [15] 7: 183-184, ill. **McGregor, E. A.**—A new spinning mite on citrus at Yuma, Arizona. [10] 36: 256-259, ill.

**THE SMALLER ORDERS OF INSECTS.—Carpenter, F. M.**—New nearctic Mecoptera, with notes on other sps. [5] 42: 105-122, ill. **Forsslund, K. H**—Zur kenntnis der Trichopteren Grönlands. [28] 53: 56-59, ill. **Montgomery, B. E.**—Records of Indiana dragonflies. [Proc. Ind. Ac. Sci.] 44: 231-235. **Pritchard, A. E.**—Two new dragonflies from Oklahoma. [Occ. Pap. Mus. Zool. Univ. Mich.] No. 319: 10 pp., ill. **Thompson, G. B.**—Notes on Mallophaga. [75] 16: 395-399. (S). **Townsend, L. H.**—Key to larvae of certain families and genera of nearctic Neuroptera. [10] 37: 25-30, ill.

**ORTHOPTERA.—Ander, K.**—Eine neue Gryllacride. [28] 54: 138-140, ill. (S). **Karny, H. H.**—Die Gryllacrididen des Pariser Museums und der collection L. Chopard. [Eos] 10: 293-393, ill. (*S). **Rehn, J. A. G.**—The Orthoptera of

Costa Rica. Part I.—Mantidae. [Pro. Acad. Nat. Sci. Phila.] 87: 167-272, ill. (*). **Snodgrass, R. E.**—The abdominal mechanisms of a grasshopper. [Smith. Misc. Coll.] 94: 89 pp., ill. **Uvarov, B. B.**—The myth of semiaquatic phasmids. [46] 30: 433-437, ill.

**HEMIPTERA.—Barber, H. G.**—A new Edessa from Florida (Pentatomidae). [10] 37: 48-49, ill. **Deay & Gould.**—An annotated list of the Membracidae of Indiana. [Proc. Ind. Ac. Sci.] 44: 236-243. **DeLong & Davidson.**—Some new North American sps. of deltocephaloid leafhoppers. [4] 67: 164-172, ill. **Gillett, J. D.**—The genital sterna of the immature stages of Rhodnius prolixus. [36] 83: 1-5, ill. **Haupt, H.**—Ueber das flügelgeäder der Singcicaden und Psylliden. [Mitt. Deutschen Ent. Gesell.] 4: 115-119, ill. Neues über die Homoptera-Aleurodina. [11] 1934: 127-141, ill. **Knowlton, G. F.**—Four Lupine aphids. [10] 37: 112-115, ill. (*). **Lallemand, V.**—Description d'une n. sp. de genre Phrictus (Cercopidae), Phrictus notatus. [28] 52: 188. (S). **Walley, G. S.**—Three rare Canadian Hemiptera. [4] 67: 159-160.

**LEPIDOPTERA.—d'Almeida, R. F.**—Lista dos lepidopteros capturados pelo Dr. R. v. Ihering no nordeste do Brasil. [105] 5: 326-328. **Benjamin, F. H.**—Notes on a rare publication by Jacob Hübner and its effect upon modern interpretation of Hübnerian nomenclature. [21] 47: 81-82. **Biedermann, R.**—Lépidoptères nouveaux. [25] 40: 209-212, ill. (S). **Busck, A.**—A new Myrmecophile tineid from Brazil. [10] 36: 243-252, ill. **Comstock, J. A.**—Miscellaneous notes on western lepidoptera. [38] 34: 142-154, ill. (*). **Comstock & Dammers.**—Notes on the early stages of three butterflies and six moths from California. [38] 34: 120-142, ill. **Hoffmann, F.**—Beitrage zur Lepidopterenfauna von St. Catharina. [17] 52: 237-239. **McDunnough, J.**—New Canadian eucosmids with notes. [4] 67: 140-149, ill. Notes on Canadian noctuids and pyralids with descriptions of n. sps. [4] 67: 172-179, ill. **Prout, L. B.**—On the Sabulodes (Geometridae) of the monastica group. [71] 39: 217-220. (S*). **Reich, P.**—Neue Arctiidae. [18] 29: 265-268, ill. (S*). **Reich, P.**—Ueber Pericopis transversa und morta (Pericopinae). Ein beispiel von weiblichem Dimorphismus. [17] 52: 234-237, ill. **Rothschild, L.**—Some new Arctiinae. [71] 39: 239-250. (S). **Rüdiger, E.**—Zwei abenteurer. [17] 52: 216-219. **Sageder, F.**—Zwei neue südamerikanische Saturniden. [14] 49: 76-78, ill. **Warren, B. C. S.**

—Supplementary notes on the structural characteristics of Pyrgus freija (Hesperiidae). [36] 83: 127-129, ill.

**DIPTERA.—Alexander, C. P.**—New sps. of crane-flies from South America. (Tipulidae). [7] 28: 313-331. **Anduze, P. J.**—Observaciones sobre larvas de Culex (sub. gen. Lutzia). [Bol. Soc. Venezolana de Cien. Nat.] 2: 438-442. **Bequaert, J.**—Notes on Hippoboscidae. The genus Stilbometopa. [105] 5: 322-325, ill. **Curran, C. H.**—New American diptera. [40] No. 812: 24 pp. **Enderlein, G.**—Weiterer ausbau des systems der Simuliiden. [11] 1933: 273-292. (S*). **Gilbert, H. A.**—The occurrence of two sps. of cecidomyids on meadow foxtail (Alopecurus pratensis) hitherto unreported in Canada. [4] 67: 154-156, ill. **Hering, M.**—Geäder-mutationen bei minierfliegen. [11] 1934: 317-323, ill. **Hinman, E. H.**—Biological notes on Uranotaenia spp. in Louisiana (Culicidae). [7] 28: 404-407. **Hull, F. M.**—Some mimetic flies, with the description of two n. sps. from No. Am. (Syrphidae). [5] 42: 99-102, ill. **Komp, W. H. W.**—Notes on the validity of the types of the species in the subg. Mochlostyrax and Melanoconion in the U. S. Nat. Mus. (Culicidae). [10] 37: 1-11. **Pritchard, A. E.**—New Asilidae from the southwestern U. S. [40] No. 813: 13 pp. **Richards, O. W.**—A note on the genus Pachyophthalmus (Tachinidae). [107] 4: 209-213, ill. **Sabrosky, C. W.**—The Chloropidae of Kansas. [1] 61: 207-268. (*). **Shaw, F. R.**—Notes on the Mycetophilidae with descriptions of n. sps. [5] 42: 84-91, ill. **de Souza Lopes, H.**—Notas sobre Sarcophagidae com descripcao de tres esp. nov. do Brasil. [105] 5: 315-322. (*). **Stone, A.**—Notes on Tabanidae. [10] 37: 11-21, ill. (*). **Townsend, C. H. T.**—Multifissicorn male Oestroids. [105] 5: 292-293, ill. (S*). Manual of Myiology. Part II. 1935: 280 pp., ill.

**COLEOPTERA.—Alfaro, A.**—Los pasalidos. [Investig. Cientif.] 1935: 287-308. **Arrow, G. J.**—A contribution to the classification of the coleopterous family Lucanidae. [36] 83: 105-125, ill. **Bequaert, J.**—An unusual case of commensalism between a snail and a coprid beetle. [The Nautilus] 49: 35-36. **Buchanan, L. L.**—Thomas Lincoln Casey and the Casey Collection of Coleoptera. [Smiths. Misc. Coll.] 94: 15 pp., ill. An apparently n. sps. of North American Hylobius, with synoptic key (Curculionidae). [10] 36: 252-256, ill. **Chapin, E. A.**—Review of the gen. Chlaenobia (Scarabaeidae). [Smiths. Misc. Coll.] 94, no. 9: 20 pp. (*). **Davidson & DeLong**—A review of the North

American species of Balclutha and Agellus (Cicadellidae). [10] 37: 97-112, ill. (*). **Eggers, H.**—Borkenkäfer aus Sudamerika (Ipidae). [105] 5: 329-334. (*). **Fisher, W. S.**—New West Indian cerambycid beetles. [50] 83: 189-210. A n. gen. of Buprestidae from Utah. [10] 37: 117-118. (*). Two new buprestid beetles from Puerto Rico. [10] 37: 30-32. **Hinton, H. E.**—Anotaciones acerca de las costumbres mecetofagicas de dos especies de Phanaeus. [An. Inst. Biol. Mex.] 6: 129-130, ill. Notes on the Dryopoidea. [107] 4: 169-179, ill. (S*). **Théry, A.**—Quelques Buprestides nouveaux du Brésil. [105] 5: 294-300, ill. **van Emden, F.**—Die Carabiden der Deutschen Chaco-Expedition. [105] 5: 301-315, ill. (*). **Voss, E.**—Einige unbeschriebene neotropische curculioniden nebst einer vorstudie zur tribus Promecopini. [74] 12: 63-104. **Fischer, C. R.**—Os coleopteros phytophagos da tribu Alurnini, pragas das palmeiras (Chrysomelidae, Hispinae). [105] 5: 257-292, ill.

**HYMENOPTERA.—Bischoff, H.**—Gedanken zu einem natürlichen system der bienen. [11] 1934: 324-331, ill. **Carpenter, F. M.**—A new name for Lithomyrmex. [5] 42: 91. **Hedicke, H.**—Beiträge zur synonymie der Apiden. [Mitt. Deutschen Ent. Ges.] 6: 10-13. **Mitchell, T. B.**—A revision of the genus Megachile in the nearctic region. Taxonomy of subgen. Anthemois and Delomegachile. [1] 61: 155-205, ill. **Monro, H. A. U.**—Observations on the habits of an introduced pine sawfly Diprion simile. [4] 67: 137-140. **Muesebeck, C. F. W.**—Synonymical notes on Ecphylus, with description of one n. sp. (Braconidae). [10] 37: 21-24. **Myers, J. G.**—Ethological observations on the citrus bee, Trigona solvestriana and other neotropical bees (Apoidea). [36] 83: 131-142. **Parker, D. L.**—Apanteles solitarius (Ratzeburg), an introduced braconid parasite of the satin moth. [U. S. Dept. Agric. Tech. Bull.] No. 477. **Richards, O. W.**—Notes on the nomenclature of the aculeate Hymenoptera, with special reference to British genera and species. [36] 83: 143-176. **Roman, A.**—The Linnean types of ichneumon flies. [28] 53: 1-16. **Ross, H. H.**—Four n. sps. of Dolerus (Tenthredinidae). [10] 37: 88-93, ill. **Sandhouse, G. A.**—The identity of the female of Ceratina dupla. [10] 37: 93-95. **Schedl, K.**—Zwei neue blattwespen aus Kanada. [Mitt. Deutschen Ent. Gesell.] 6: 39-44. **Smith, C. E.**—Larra analis, a parasite of the mole cricket Gryllotalpa hexadactyla. [10] 37: 65-82, ill. **Walley, G. S.**—Descriptions of two n. sps. of Xenoschesis with a key to the genus (Ichneumonidae). [4] 67: 179-181. **Wheeler, G. C.**—The larva of Allomerus (Formicidae) [5] 42: 92-98, ill.

BRIEF DIRECTIONS IN HISTOLOGICAL TECHNIQUE. By ELERY R. BECKER, Professor, and ROBERT L. ROUDABUSH, Instructor, Dept. of Zoology, Iowa State College. Collegiate Press, Inc., Ames, Iowa. 1935. 8½ x 6 inches. Pp. ix + 80, including 16 blank pages for notes. Price $1.00. "The simple, essential procedures herein outlined for the inexperienced student are principally in the fields of general histology, general zoology, parasitology, entomology and protozoology. Most of the methods presented have been tried by us, or by persons working in association with us, and found to be readily workable under ordinary conditions." Lists of pertinent literature and of sellers of needful supplies are given in chapter I and on pages 77 and 78. The second and longest chapter (14 pp.) describes "The Zenker-Paraffin-Delafield Method" as one of the most reliable and successful general methods of preparing stained sections of tissue for microscopic study. Some alternative techniques in fixation, dehydrating and clearing, imbedding, staining and mounting occupy chapters III-VII. In chapter VIII, Some Special Methods, pages 66-70 are devoted to insects, giving suggestions for fixing, embedding and sectioning these hard-shelled animals and for making mounts in toto. The book is clearly printed and is bound with wire rings so that it lies perfectly flat wherever it is opened. It should be very useful. There is a 2-page index.

P. P. CALVERT.

## A Fifty Year Festschrift.

Festchrift zum 50-jahrigen Bestehen des Internationalen Entomologischen Vereins E. V. Frankfurt a. M. 1884-1934. Entomological News congratulates this well known society on its fifty years of activity and wishes it the enjoyment of many years to come, and the continuance of its interesting "Zeitschrift."

The above mentioned publication of 48 pages contains a chronicle of the society with portraits of 36 of its prominent members and contributors to its Zeitschrift; also articles on the Upper Steyerian Lepidoptera by Karl Kusdar; on a new Dromius variety by Ernst Buchka; on a northern and alpine butterfly indigenous to Schleswig-Holstein, by G. Werneche; a contribution to the Lepidoptera of Spain, by W. Marten; and some little "entomological" adventures, by C. Vosbrodt.

—E. T. CRESSON, JR.

## OBITUARY

Prof. GEORGE HAZEN FRENCH passed away suddenly on January 1, 1935, at Carbondale, Illinois. He suffered from infirmities of senility and would have been ninety-four on March 19. For thirty-nine years he was a member of the Southern Illinois Teachers' College faculty and was employed as an assistant state entomologist to Cyrus Thomas during 1877-78. He acted as a consulting pathologist and endocrinologist at the Herrin Hospital.

He was born at Meager Hills, near Tully, New York, March 19, 1841. He attended Courtland Academy for two years, received a degree from the State Agricultural College at Irvington, and taught his first school at Christian Hollow. He became principal of schools at Belvidere, Illinois, later taught at Irvington, and finally moved to Carbondale where he was called to teach. In 1872, he married Miss Harriet E. Bingham at Irvington. He leaves two nieces, but no near relatives, having never had children.

He was one of the early naturalists, and his scientific researches have given him a valuable place in many fields of natural science. Most of his time was devoted to the cause of seasickness and epilepsy and to the facts of insect life. He is the author of a textbook, "Butterflies of the Eastern United States," a laboratory manual, "Dissection and Histology," and above 200 shorter publications. He was an active visitor of the Farmer Institutes and a member of the Illinois State Horticultural Society, having served on the studying committee. He was a member of the American Association for the Advancement of Science, Southern Illinois Medical Association, Entomological Societies of New York and London, Academy of Natural Sciences of Philadelphia, Saint Louis Academy of Science, Canadian, French, and Belgian Entomological Societies, and an honorary member of the Lübeck Society of Natural Science.

JOHN K. KARLOVIC.

### Biographical Article on Eugene Amandus Schwarz.

The sixteenth volume of the *Dictionary of American Biography*, published by Charles Scribner's Sons, New York, for the American Council of Learned Societies, contains an article by Dr. L. O. Howard on this well-known entomologist (1844-1928) who, it is here stated, would not allow the Editors of *Who's Who in America* or of *American Men of Science* to mention his name.

# EXCHANGES

**This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.**

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

**Exchange**—Will collect insects of Connecticut this season and desire to get in touch with collectors desiring this material, either in exchange or for cash. Harry L. Johnson, So. Meriden, Conn.

**Wanted**—Names and addresses of those desiring Cocoons of Actias luna and Automeris io. Exchange considered. Eggs in season. Virginia Weaver, 822 S. College Ave., Tulsa, Okla.

**Geometers Wanted** from all parts of United States, for cash or exchange. Edward Guedet, P. O. Box 305, Napa, California.

**Wanted**—Tabanidae (Horseflies and Deerflies). Exchange, purchase, or for determination. G. B. Fairchild, P. O. Box 272, Monticello, Fla.

# SUBSCRIPTION BLANK

Enclosed find payment for my subscription to ENTOMOLOGICAL NEWS for one year, beginning with issue for .....

*Name* .....

*Address* .....

*Post Office* .....

The subscription price per year of ten (10) numbers:

**United States, Central and South America, $3.00**
**Canada, - - - - - - - - 3.15**
**Foreign, - - - - - - - - 3.25**

Payments are acceptable in United States currency and Postal Money Order, by Check on Domestic (United States) bank, Foreign draft on New York, and by International Postal Order.

Address ENTOMOLOGICAL NEWS,
1900 RACE STREET, PHILADELPHIA, PA., U. S. A.

# RECENT LITERATURE

FOR SALE BY

## THE AMERICAN ENTOMOLOGICAL SOCIETY

1900 RACE STREET, PHILADELPHIA, PA.

**These prices to DOMESTIC PURCHASERS only.**

Quotations to foreign purchasers will be given on application and are subject to differences in Foreign Exchange rates.

---

### COLEOPTERA

999.—**Linsley** (E. G.).—Studies in the Longicornia of Mexico. (Cerambycidae). (Trans., **61**, 67-102, 1 pl., 1935)..... .70

### DIPTERA

1003.—**Sabrosky** (C. W.).—The Chloropidae of Kansas. (Trans., **61**, 207-268, 1935) ..... 1.20

### HYMENOPTERA

998.—**Allen** (H. W.).—North American wasps of the genus Neotiphia (Tiphiidae). (Trans., **61**, 53-65, 1935)..... .25

1002.—**Mitchell** (T. B.).—A revision of the genus Megachile in the Nearctic region. III. Taxonomy of subgenera Anthemois and Delomegachile. (Trans., **61**, 155-205, 2 pls., 1935) ..... 1.00

### LEPIDOPTERA

997.—**Braun** (A. F.).—Notes and new species of Microlepidoptera. (Trans., **61**, 45-52, 1935) ..... .20

### ORTHOPTERA

M-8.—**Rehn & Rehn.**—The Eumastacinae of southern Mexico and Central America (Orthoptera: Acrididae). (Mem. 8, 84 pp., 6 pls., 1934)..... 2.50

1001.—**Hebard** (M.).—Studies in the Orthoptera of Arizona. I. New genera, species and geographical races. (Trans., **61**, 111-153, 4 pls., 1935)..... .85

### THYSANOPTERA

1000.—**Hood** (J. D.).—Five new Thysanoptera of the genus Aeolothrips. (Trans., **61**, 103-110, 1 pl., 1935)..... .20

---

Write your name and address in the space below. If that given is not correct, please advise us.

Herewith find remittance for $_____, for which please send me the items checked above.

## IN THE PAST YEAR OUR RED CROSS HAS----

Given assistance to the victims of 160 disasters.

Sent public health nurses on more than 1,000,000 visits to persons ill in their homes.

Provide nurse instructors to teach Home Hygiene and Care of the Sick to 52,000 persons.

Maintained classes of instruction in First Aid and Water Life Saving, awarding certificates to 187,000 in First Aid and 74,000 in Life Saving.

Assisted more tham 250,000 veterans and their families, provided recreation in veterans hospitals, and aided the men of our armed forces and their dependents with similar services.

Given material relief and personal service to thousands of civilian families who had nowhere else to turn for the assistance needed.

Enrolled 7,700,000 school children in community service through Junior Red Cross

Maintained 3,700 Chapters and 9,000 Branches in the United States and its possessions and a strong National Organization which cooperates with the Red Cross Societies of 61 other countries.

---

## EXCHANGES CONTINUED

**Exchange.**—Lepidoptera of the Western United States for rare American or tropical specimens. C. W. Herr, Woodburn, Ore. R-3.

**Wanted**—Insects in exchange for Japanese insects or to buy. Tell me your wishes. Hiromu Yamamoto, Matsuo-Kozan. : Iwategun Iwateken, Japan.

**Would like** to exchange Southern California insects for any North American Mutillidae (wingless wasps or velvety ants). Curtis Brown, 2950 G St., San Diego, California.

**Wanted.**—To get in touch with Specialists who will make determinations for a share of our duplicates. We have many undetermined specimens from all parts of Iowa.—H. E. Jaques, Iowa Insect Survey, Mt. Pleasant, Iowa.

**Wanted.**—Communication with anyone who has or is collecting Lepidoptera in Burlington County, New Jersey Also anyone having a microscope for sale.—E. P. Darlington, New Lisbon, N. J.

**Wanted for Cash or Exchange.**—North American Butterflies in series especially from type localities and remote places. C. F. dos Passos, Mendham, New Jersey.

# NEW LOW PRICES
## for
# WARD'S ENTOMOLOGICAL EQUIPMENT

**Ward's Schmitt Box, 9x13 Inches**
**LINED WITH PATENT ENTOMOLOGICAL CORK**

Price each . . . . . $2.50
Price each in dozen lots . . . . . $2.45
Price each in lots of 50 . . . . . $2.45

Ward's Insect Pins (A. E. Co.), per M . . . . . $3.00
Klaeger Insect Pins, Per M . . . . . $2.25
Minutens, per M . . . . . $2.25

**SEND FOR PRICE LIST E 1.** This includes many items at new low prices and also describes several new aquatic nets and other newly developed pieces of equipment.

**READY SOON!** **Catalog 300.** The Showy Butterflies of the World. Lists over 600 attractive species. Sent free upon request.

## Ward's Natural Science Establishment, Inc.
**P. O. Box 24, Beechwood Station**
**ROCHESTER, N. Y., U. S. A.**

---

# FINE INDIAN DIURNALS,

in papers, named, 100 (50 species), $6.00; 200 (100 species), $12.00. New Guinea Delias, etc., fine Morphos from French Guiana. Urania riphaeus and other brilliant species. British Lepidoptera: 500 species $20.00, 1000 species $50.00. British Coleoptera: 500 species $12.00, 1000 species $30.00, 1500 species $50.00. All named.

Antram's Butterflies of India, 600 illustrations, $7.00. Many others.

A. FORD,
**42, IRVING ROAD, BOURNEMOUTH, ENGLAND**